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TWO NEW SPECIES OF RUSTS

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On a collecting trip at Takoma Park, Maryland, with Dr. G. G. Hedgcock, a caeoma-like species of *Peridermium* was collected on *Pinus rigida* Mill. which proved to be *Peridermium delicatulum* Arth. & Kern. Later, in looking over the species of *Peridermium* in the Pathological Collections of the United States Department of Agriculture, hoping to find other collections of this rare species, the writer found a specimen on *Pinus virginiana* Mill., which from its gross characters appeared to be *Peridermium delicatulum*, but a microscopic examination showed it to be an undescribed species.

On a trip made during 1911 through some of the forests of Arizona and new Mexico, the writer while descending the Santa Catalina Mountains found, on *Coursetia glandulosa* Gray, a rust which on microscopic examination proved to be an undescribed species intermediate in its generic position between *Phragmopyxis* Dietel and *Calliospora* Arth. Technical descriptions of these two fungi are given below.

Tricella gen. nov.

Cycle of development includes only pycnia and telia, the former subcuticular, the latter subepidermal. Pycnia conoidal, ostiolar filaments usually present; telia erumpent, without paraphyses; teliospores free, three-celled by transverse septa; walls laminate, the inner layer firm, colored, the outer layer gelatinous, translucent, overlaid by cuticle, the pores 3 or 4 in each cell and lateral, pedicel bulbous in the middle.

This genus is intermediate in its characters between *Phragmopyxis* and *Calliospora*, having the three-celled teliospores of the former, and the same cycle of development as the latter.

Tricella acuminata sp. nov.

O. Pycnia epiphyllous in groups intermixed with the telia, smooth, pale-brown, subcuticular, 70–75 μ wide by 50–70 μ high; ostiolar filaments hyaline, 25–35 μ long.

III. Telia amphigenous but mainly epiphyllous, those on lower surface usually opposite corresponding telia on upper surface, more or less circular to ellipsoid, often confluent, 0.5 to 4 mm. in diameter, blackish-brown, pulverulent, ruptured epidermis rather inconspicuous; teliospores ellipsoid to ellipsoid-ovoid, acuminate, rounded at base, $25-40 \times 50-75 \mu$, not constricted at septa; walls laminate, the inner layer firm, dark-brown, $3-4 \mu$ thick, the pores 3 or 4 in each cell, lateral and opposite, the outer layer gelatinous, pale amber-colored at apex, remainder of layer colorless, $4-7 \mu$ thick, sparsely and evenly verrucose; pedicel $50-100 \mu$ long, $10-12 \mu$ thick near spore, colorless, except part at base which is amber-colored for about 10μ where it broadens out into an ovoid to ellipsoid, hyaline, solid bulb $20-30 \mu$ wide by $25-40 \mu$ long, then contracts into normal size and shape, pedicel down to and including bulb solid or nearly so, below bulb hollow but with thick walls, outer layers of bulb rapidly swelling in water and bursting. Spores often deciduous just below bulb even before being wet; portion of pedicel below bulb not gelatinous nor swelling in water.

On FABACEAE. Type collected on *Coursetia glandulosa* Gray in Sabina Canyon, 5000-7000 feet elevation, Santa Catalina Mountains, Arizona, October 15, 1911, by Long & Hedgcock. It was first found at an elevation of about 7000 feet and was fairly common on this host along the south trail down to the foot of the mountain in the canyon. The writer is indebted to Prof. J. J. Thornber for the identification of the host.

Peridermium inconspicuum sp. nov.

O. Pycnia chiefly hypophyllous, sparse in material at hand, low, conoidal, subcorticular, dehiscent by a longitudinal slit, $0.2-0.3$ mm. broad, $0.3-0.7$ mm. long, $85-120 \mu$ high.

I. Aecia from a limited mycelium, amphigenous, one to several on slightly discolored spots occupying part of leaf, erumpent from a narrow slit, flattened laterally, $0.3-0.7$ mm. long by $0.3-0.9$ mm. high, rupturing irregularly, peridium colorless, very fragile, cells overlapping, oblong-lanceolate to oblong, $19-26 \mu$ wide by $32-55 \mu$ long, average size for ten cells $20 \times 37 \mu$, outer wall about 3μ thick, minutely verrucose, inner wall $5-8 \mu$ thick, closely verrucose, with rather prominent papillae. Aeciospores ellipsoid to spheroid $16-18 \times 22-30 \mu$, average size for ten spores $16.7 \times 25 \mu$, walls colorless, thin, $1-2 \mu$, minutely verrucose, warts often in irregular groups with clear areas between.

On PINACEAE. Type collected on *Pinus virginiana* Mill. at Glen Echo, Maryland, May 5, 1907, by Miss V. K. Charles. Also collected in same locality on same host June 16, 1912. This species is intermediate in its characters between *Peridermium delicatulum* Arth. & Kern and *Peridermium montanum* Arth. & Kern, but differs from the former in its more prominent aecia and in its overlapping and oblong-lanceolate peridial cells and from the latter in the size of the peridial cells and in the shape and size of the aeciospores.

The peridia of this species are very fragile, so much so that the herbarium specimens collected in 1907 have entirely lost their peridia, and in the field they soon fall away, making the aecia inconspicuous. In this condition they much resemble *Peridermium delicatulum* but a microscopic examination readily shows that the peridial cells distinctly overlap and are not isodiametric but are much longer than broad. This seems to be the first foliicolous species of *Peridermium* reported for this host. The type material was collected from a tree about four feet tall, and was fairly abundant on this one plant. This season (1912) a careful search was made over the same locality from which the type was collected, but only five affected needles were found, and then only one or two to a tree.

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